

which those entitled to speak with authority say was never equalled in this country. The specimens numbered about 7,000. Almost every county in Scotland made large contributions, while England and Wales sent a number of exhibits. In fact, almost every fungologist in Britain contributed specimens.

In an address on Education at Rochdale on Saturday, Mr. Jacob Bright urged the claims of Owens College, Manchester, to assistance from the national exchequer, and hinted that a time was approaching when the enormous revenues of Oxford and Cambridge would be made more productive to the country.

THE members of the *Tegethof* Austrian Polar Expedition have arrived at Hamburg. They everywhere in Norway met with a very cordial welcome. The new country, as far as explored, comprises five islands, and contains hares and foxes. When rescued, the members of the expedition were in rags, and for a fortnight had been short of provisions and of firing. They were compelled to shoot all the sledge dogs, as the animals showed signs of madness. The members of the expedition will, it is expected, reach Vienna to-morrow.

A NOTICE has been issued from the Science and Art Department that the Classes in Chemistry (Prof. Frankland), Biology (Prof. Huxley), Physics (Prof. F. Guthrie), and Applied Mechanics (Prof. Goodeve), have been transferred to the new buildings, South Kensington, where they will open in the beginning of October.

MR. ANDREW MURRAY writes to the *Gardener's Chronicle* that he has, within the last few weeks, made some observations at the Ochil Hills, Kinross-shire, on *Pinguicula* and *Drosera*, with reference to the fly-digesting powers they are asserted to possess. He states that he found the leaves of *Pinguicula* close, quite independently of the fact of a fly being in them or not. "The leaves are found with their margins in all stages of curling over, some with no insect on them much more curled over than others with several." The secretion which Dr. Hooker states kills a captured insect he finds is glutinous, and he believes it does not fall on to the insect, but that death results from the secretion adhering to and closing up the spiracles by which the insect breathes. With regard to *Dionæa*, he suggests that it should be carefully noted (1) whether the secretion is never present until after an insect has been captured; (2) whether it is always present after one has.

AMONG the recent additions to the Manchester Aquarium is fine specimen of the Monk or Angel Fish, between five or six feet in length, and weighing at least one hundred pounds. With the exception of an example of very similar dimensions brought to the Brighton tanks about a year ago, but since dead, it is one of the largest yet recorded as taken on the British coasts. This specimen was captured at Colwyn Bay, near Conway, and is still in the most healthy and perfect condition. A number of young herring, of which fish the Manchester Aquarium now possesses many hundreds, were consigned last week by the curator, Mr. W. Saville-Kent, to the aquarium at the Crystal Palace; most of these arrived in safety, and are of especial interest as being the first of the species successfully introduced at that institution.

THE additions to the Zoological Society's Gardens during the past week include a Chimpanzee (*Troglodytes niger*); a Bay Antelope (*Cephalophus dorsalis*), and three Royal Pythons (*Python regius*), from West Africa, presented by Mr. C. B. Mosse; a King Vulture (*Gyparchus papa*) from South America, presented by Mr. G. I. Brumschweiler; a Grey Ichneumon (*Herpestes griseus*) from India, presented by Capt. Hallett; two Little Bitterns (*Ardeetta minuta*), European, presented by Mr. A. A. van Bemmelen; an Alligator (*Alligator mississippiensis*) from Demerara, presented by Capt. Turner; a Yellow-fronted Amazon (*Chrysotis ochrocephala*) from Guiana, deposited.

MARITIME CONFERENCE

THE conclusions come to by the recent Conference on Maritime Meteorology have been forwarded to us with the following letter:—

"Sir,—I have the honour to inform you that the Permanent Committee of the International Meteorological Congress at Vienna (1873), at whose suggestion the recent Conference for Maritime Meteorology was held in London, has resolved to forward the Resolutions adopted at that Conference for publication at once, thus anticipating the publication of the full Official Report of the Conference. The Permanent Committee will feel deeply obliged if you can find space for them.

"ROBERT H. SCOTT,

"Secretary to the Permanent Committee."

Resolved—"That there should be but one form of Meteorological Register for the Navies and Merchant Services, and that those who cannot fill the log should keep part of it."

Questions.

I.—OBSERVATIONS—

Columns 1 to 6.*—*Date and Position of the Observations.*

Is it your opinion that a fresh column should be added headed "Course and distance by the log in every watch of four hours?"

That an additional column should be given in the log for "Course and distance."

That the course should be expressed in degrees, and not in points.

That the question of hours, 4-hourly periods, as proposed by Captain Toynbee, should be adopted.

Columns 7 and 8.—*Currents.*

That observations on the "direction and rate" of currents be transferred to the column for Remarks.

Column 9.—*Magnetic Variation.*

Is it desirable to give an additional column for the "Direction of ship's head?"

That an additional column be given in the log for the direction of the ship's head, and the amount of heel to port or starboard.

That the total compass-error and not variation only be given.

That the Conference expresses its opinion that the lettering on the English compass should be adopted by all nations for meteorological purposes.

Columns 10 and 11.—*Wind Direction and Force.*

Is it possible to employ an anemometer at sea, so as to give trustworthy results?

That a decided answer to this question cannot at present be given, but it is desirable that various anemometers should be tested by special ships, and that a special form of four extra columns should be prepared for the purpose of recording such observations.

Can the use of the Beaufort scale be made universal?

That the use of the Beaufort scale should be continued, with the addition of the amount of sail which Beaufort's ship would have carried had she been rigged with double topsails. Also that the direction and force of the wind should be recorded at the time of observation, and not estimated for a certain number of previous hours. Also, that they should be recorded every two hours.

Columns 12 and 13.—*Barometer.*

To what degree of minuteness is it necessary to observe at sea, or its equivalent in the metric scale?

To one-hundredth of an inch at sea, or its equivalent in the metric scale.

* The numbers of the columns refer to the Brussels Abstract log.

Columns 14 and 15.—*Thermometers, Dry Bulb and Wet Bulb.*

Should these observations be required from all ships? That wet and dry bulb observations are desirable, and should be obtained whenever possible.

Column 16.—*Forms and Direction of Clouds.*

Is this column sufficient, or should any notice be taken of more than one stratum of clouds? That the upper and lower clouds should be recorded in separate columns, and that the direction from which upper clouds come should be recorded when possible.

Column 17.—*Proportion of Sky Clear.*

Is it not advisable to substitute for this heading "Proportion of sky clouded"? That it is preferable to give the proportion of sky clouded instead of the entry "proportion of sky clear," as recommended by the Brussels Conference.

Column 18.—*Hours of Rain, Fog, Snow, &c.*

Is it desirable to retain this heading, or to substitute for it and No. 23, a column headed "Weather by Beaufort Notation"? That it is desirable to retain this heading, but that the use of Beaufort's Notation may be continued by those accustomed to it.

Column 19.—*State of the Sea.*

Should this be given according to a numerical scale? That a numerical scale (0-9) be adopted, and that an extra column should be given to the observation. The direction of the sea swell, or the different swells, to be given in the original column.

Columns 20 to 22.—*Temperature of Sea Surface, Specific Gravity, Temperature at Depths.*

Is it desirable to retain these columns, or can the observations when taken be inserted in the column for "Remarks"? That the first two columns should be retained. That sea temperatures at depths should not be required from all ships, and should be recorded in the "Remarks."

Column 23.—*Weather.*

Vide the resolution on Col. 18.

Column 24.—*Remarks.*

That the "Remarks" as asked for by the Brussels Conference should be adopted, with the exception of the observations of temperature with coloured bulbs at sea.

II.—INSTRUMENTS.

What patterns of instruments should be employed for any observations which may require them?

That the question of the precise pattern of instruments is not of very great importance, so long as they satisfy the tests applied at the several central Institutions and are compared with standard instruments; but it is recommended that they shall be of a pattern as easy as possible for reading.

Is there any reasonable possibility of introducing the metric and centigrade systems for general use at sea?

The recommendation respecting the use of the metric and centigrade systems as expressed at the Vienna Congress was approved, and it was recommended that a table of conversion should be entered in each log to enable Captains to compare barometers which have different scales.

III.—INSTRUCTIONS.

Is it possible to devise a general form of Instructions to ensure uniformity in regard of methods of observation and registration?

That the Instructions should be suited to the log now proposed by the Conference, but modified to meet the various requirements of different nations.

The Conference requested that Capt. Toynbee's proposed form of log should be lithographed and the English "Instructions" printed for circulation amongst its members.

IV.—OBSERVERS.

What control should be exercised over the Observers as to their instruments and registers?

That it is necessary that all instruments used should be compared with standard instruments, either at the central or the filial institutions (if such exist), before and after the voyage; and that the corrections and date, &c., of the comparison should be entered in the log.

Is it desirable that all instruments employed should be the property of the central establishment, and lent to the observers?

That it is desirable that the instruments should be the property of the central office.

That it is necessary that a careful examination should be made into the quality of the observations recorded, and that the attention of the observers should be specially directed to any errors which may have been detected.

V.—CO-OPERATION OF THE ROYAL NAVY.

To what extent can ships of war assist in forwarding the ends of meteorological inquiry?

The Royal Navy can furnish more complete observations than are possible on board merchant ships, as, e.g.,

Deep-sea soundings and temperatures.

Observations in unfrequented parts of the sea.

Special experiments.

It is most desirable that the duty of observing should be intrusted to some responsible Officer.

It is therefore resolved that the Authorities of the Navies shall be requested to continue to give such assistance to the prosecution of meteorological science as circumstances shall permit.

A Report was handed in which had been drawn up by a number of the members who were in the Naval Services of some of the countries represented, and it was decided that the following resolutions which it contained should be adopted in lieu of those given above:—

1. "It is very important that the organisation of meteorological inquiry as regards the Navies of all countries should be arranged in accordance with the principles and stipulations laid down by the Conference for Marine Meteorology generally; and it is further important that the results of all observations made on board ships of war in any country should be rendered accessible for discussion by the central station for maritime meteorology in that country without prejudice to any subsequent publication by the respective Naval Authorities."

2. "The Conference, while admitting that the introduction of measures calculated to improve the condition of meteorological inquiries in the Navy must be left to the Authorities of the respective Navies, is nevertheless of opinion that all care should be taken to secure uniformity as to mode of observation, and especially to provide for the comparison of all instruments used with the respective standard instruments of the Central Institutes."

3. "The Conference considers it to be its duty to request that those entrusted with the management of scientific affairs on board men of war will lend their strenuous support in securing from the Naval Authorities in each country such regulations as will place meteorological inquiry on board such ships in as favourable a position as may be deemed consistent with the execution of the ordinary duties of the Service, and will also induce the commanders to render to such inquiries all the assistance and furtherance in their power. The Conference, knowing that such regulations must be framed according to the requirements of each country, expresses, nevertheless, its opinion that, inasmuch as meteorological observations require considerable experience, they should be entrusted to experienced Officers on board suitable vessels."

4. "Although the Conference is of opinion that, as far as the general scope of meteorological inquiry goes, the same form of register should be supplied to merchant ships as to men of war, it declares it will be most desirable that, besides the regular observations, a more extended scale for scientific inquiry should be adopted on board ships of war, as in such cases there is a large number of suitable officers, as well as more means for carrying on the service. As examples of observations which are of importance for the development of Maritime Meteorology, over and above the regulations embodied in the scientific instructions given to Naval expeditions for the special purpose of the advancement of science, the following suggestions may be enumerated:—

(a) "Possibility of carrying out accurate observations on the velocity of the wind by anemometers at sea.

(b) "Possibility of employing rain-gauges satisfactorily at sea.

(c) "Observations with Regnault's and other hygrometers, and experiments on the best mode of observing wet and dry thermometers, and the best position to place them in on board ship.

(d) "Currents at the surface and at depths to be observed with great minuteness, with the special object of defining their limits.

(e) "The comparison of various instruments, among which are expressly mentioned that of aneroids with mercurial barometers. It is further deemed very desirable that frequent comparisons should be instituted between the instruments used at sea and meteorological stations on shore in various countries.

(f) "Deep-sea soundings and temperatures, with specimens of water.

(g) "The collecting of information on Ocean Meteorology at outlying stations.

(h) The furnishing of synchronous observations at Oh. 43m. G. M. T., in accordance with the suggestion and request of the United States Signal Office."

VI.—DISCUSSION.

Can general suggestions be thrown out as to the most profitable mode of discussing the observations?

That it is desirable that every Institution should publish the observations and results in such a manner that every foreign institute can incorporate them with its own observations and results in the easiest way possible; that is, by preserving the number of observations, together with any means derived from them, for single square degrees.

That it is further desirable that, whatever charts be published, the results for single square degrees should be published in a tabular form.

That it seems desirable for the use of the sailor that each chart should have reference to only one element, or, at least, only to elements closely related to each other.

VII.—SUBJECTS OF INQUIRY.

To what extent can a division of labour, as regards subjects of inquiry, be carried out in a spirit of fairness to the collecting and discussing establishments respectively?

That the division of labour, as regards investigations, can only be carried out by mutual agreement between the several institutions; and each institution should announce to other institutions what investigations it proposes to undertake.

It is very desirable that such divisions of labour should be effected.

VIII.—SAILING DIRECTIONS.

In how far are purely practical investigations, such as the preparation of sailing directions, admissible for a scientific institution?

That the sailor wants the result of experience alone, and he must receive assurance that his observations have been turned to use. When these results of experience have been given, the theorist may point out the reason why certain routes are the best.

It was resolved, that Capt. Toynbee's remarks on the programme should be printed in full, with extracts from the remarks of other gentlemen, should they contain important suggestions.

THE BRITISH ASSOCIATION

REPORTS

Report of the Committee on Luminous Meteors, by Mr. Glaisher.

—The appearance of meteors noticed in published journals, and otherwise ascertained by the committee during the past year, include some striking examples of such remarkable exhibitions, discussed and investigated very ably by astronomers, as well as of others passing almost unobserved excepting by accidental gazers. A few such large meteors were doubly observed in England. Some have been visible in the day-time, while many other large and small fire-balls have been described to the committee, of which it is to be regretted that notices have hitherto only reached them from single observers. The months in which these phenomena have been most abundant were September, December, and January last, April, June, and again quite recently, the last few days of July and beginning of August of this year. The report contains descriptions of the brightest of these meteors, and an account of Prof. Galle's calculations and inquiries regarding the real cause of two large meteors which passed over Austria on the 12th and 19th of June last, with the probable path that he assigned to them. If a mass of burning sulphur found on the ground immediately after the disappearance of the latter meteor is not considered presumably meteoric, no occurrence of a fall of aërolites, as far as the committee is aware, has taken place during the past year.

The annual star-showers have been watched for with the usual attention of observers in correspondence with the committee; and the results of their combined observations are described, with accounts of some other occasional star-showers, at some length in the descriptive part of the report. Although little important information was thus added this year to our present well-known star-showers of January, April, and October, and the cometary meteor showers of November 14 and 27, connected with Tempel's and with Biela's comet, all of which, in spite of very favourable weather for their observations, were this year most remarkable by their non-appearance; yet the fluctuating intensities of these showers at their successive periodic dates are an important element to record; and in the case of the star-showers of August 10 and December 12 of the past year, the watch was at least attended with more positive success. Duplicate observations of meteors were obtained in them, and the general centre of divergence of each of these two meteor-currents was pretty exactly ascertained. Bright meteors were more frequent on each of these two nights than is at all usual in ordinary exhibitions of those showers. It will be found among these observations that the return of Biela's meteor-shower on the 27th of November last disappointed expectation, and the small extent and rapid departure of that meteor-cloud from the earth's neighbourhood is clearly shown by its visibility as a star-shower only for a single year.

The duplicate observations described in former reports have been reduced at the request of the committee by Mr. T. H. Waller, whose report of these calculations is added, and whose conclusions of their real heights and velocities are without doubt very accurate and complete.

The publication of Capt. Tupman's observations of shooting stars in the Mediterranean during the years 1869-71, with the list of radiant points obtained from them and shown on a pair of charts accompanying them by Capt. Tupman, is now brought to a close, and the catalogue and charts have been sent to astronomers and correspondents of the committee in England and abroad, and in America, and discussions of these in foreign scientific journals have appeared, showing the important light in which the appearance of this valuable new meteor catalogue has been regarded. Its principal part, the comparative catalogue of his meteor-showers with those of other observers, and the charts on which they are projected, are presented in this report, with Dr. Schmidt's similar catalogue (the remaining two principal meteor-shower lists, of which no account has yet appeared in these reports), thus placing before readers of recent volumes of these reports all the material contributions to this branch of meteoric astronomy that have yet been made.

They are summed up in a very concise catalogue at the end of this report by Mr. Greg, who has selected, to corroborate such observations already published in his former lists, the greater